

REMARKS/ARGUMENTS

Upon entry of the present amendment, claims 1, 2 and 7-13 are currently pending. Claim 1 has been amended. No new claims have been added. Reconsideration of the application is respectfully requested in light of the foregoing amendments and the following remarks.

Claim 1 has been amended to incorporate the limitation of the pulse counter. This amendment finds support throughout the specification, specifically on page 8, paragraph 0036.

Applicants believe that no new matter has been added to the claims by the claim amendments.

Claim Rejections - 35 U.S.C. § 103(a)

Claims 1-2 and 7-13 have been rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Lee et al. (U.S. Patent No. 6,820,158) [hereinafter Lee] in view of Kaganoi (U.S. Patent No. 6,772,269) [hereinafter Kaganoi], and further in view of Zheng et al. (U.S. Patent No. 6,407,983) [hereinafter Zheng.] Applicants respectfully traverse the rejection in view of the claim amendments and the comments below.

First, Applicants note that the independent claim 1 has been amended as set forth above. Claim 1 now describes a device having a bus control module that has a comparator and a mechanism to release the blocked data bus. Furthermore, independent claim 13 describes a device having the bus control module with a counter and a mechanism to release the blocked data bus. Applicants respectfully submit that independent claims 1 and 13, as well as the dependent claims having bases in claim 1, are not obvious as amended, for reasons set forth below.

Regarding independent claims 1 and 13, the Office Action alleges that Lee teaches a device for data communication having, *inter alia*, the transmission path implemented as a data bus and an arbitration unit that decides which master may use the ring when data communication conflicts arise. (Column 5, lines 40-56.) However, Lee's arbitration unit is provided decentrally, outside of the data bus connecting Master to Target (Lee, Fig. 4A or 4B).

The arbitration unit of Lee thus communicates independently from the bus, and, consequently, needs additional signal lines which are specifically dedicated to the arbitration unit. In the presently pending claims, the bus control module, which the Office Action roughly contrasts to Lee's arbitration unit, is located on the data bus 9, thereby being an integral part of the ring connector transmission path that connects Master and Client interface modules. The bus control module placement of the presently pending claims does not require additional signal lines for the bus control module. Thus, the presently pending claims are not obvious over Lee.

The Office Action alleges that it would have been obvious to one of ordinary skill in the art to use the bus switch bridge of Kaganoi (column 3, lines 1-3) in the system of Lee to increase the transfer bandwidth of the sources. Applicants respectfully submit that it is not obvious to combine the system of Lee, in particular Lee's arbitration unit, with the bus switch bridge of Kaganoi, because with the presently pending claims a person having ordinary skill in the art would seek to improve on the arbitration between two frames. Thus, a combination of Kaganoi and Lee references with a purpose to, according to the Office Action, "increase the transfer bandwidth of the sources" is not contemplated by a person skilled in the art.

Nevertheless, assuming arguendo that a motivation to combine exists, which does not, Applicants respectfully submit that to combine the arbitration unit of Lee with the bus switch bridge of Kaganoi would lead to an illogical end result. In the presently pending claims, a person skilled in the art would not seek an increase in the transfer bandwidth of the sources, because one of the goals of the presently pending claims is to achieve error-free arbitration frame transmission at the expense of the transfer bandwidth, since the arbitration frames in the presently pending claims are re-transmitted as needed to assure proper detection by the client (page 9, columns 8-11.) Thus, a person skilled in the art would, in fact, attempt to exclude the arbitration unit of Lee from the presently pending claims in order not to compromise the desired accuracy of the device over the unnecessary increase in bandwidth.

Next, Applicants respectfully submit that even if the arbitration unit of Lee was hypothetically combined with the bus switch bridge of Kaganoi, the end result would differ from the presently pending claims. The hypothetical combination of Kaganoi and Lee, as suggested by

the Office Action, would be based on the Kaganoi device which allows sending new frames on the bus. In this hypothetical combination, the transmission speed along the bus is not limited by the inability of each module along the bus to keep up with the data transfer amount (column 3, lines 6-8 and 56-58). The Kaganoi device can afford this transfer speed increase, because that device has a number of input and output registers which serve as a temporary storing buffers for the data missed by the modules (column 3, lines 26-33). Synchronization in the time domain is not achieved (neither it is needed, thanks to the buffers) in the device of Kaganoi. The hypothetical combination of Kaganoi and Lee, as suggested by the Office Action, would generate fast, but unsynchronized, frames on the data transmission bus. Inevitably, the lack of synchronization would lead to the events where more than one arbitration frame is generated simultaneously, which would generate errors and confuse the bus communication of the presently pending claims, thereby obliterating the essential function of the device in the presently pending claims 1 and 13. Therefore, Applicants respectfully submit that the presently pending claims 1 and 13 are not obvious over Lee in view of Kaganoi.

The Office Action also alleges that even though Lee as modified by Kaganoi does not explicitly disclose the bus control module provided with a counter, Zheng teaches the bus control module with a counter that counts the pulses between the passage of the two arbitration frames.

Applicants respectfully submit that it is not obvious to further combine the combination of Lee and Kaganoi, with the bus control module of Zheng because in the presently pending claims the person having ordinary skill in the art looks for a mechanism that provides an arbitration scheme between two frames, not a mechanism that changes the overall bus bandwidth.

Nevertheless, assuming arguendo that a motivation to combine exists, which does not, the Zheng bus control module attempts to increase or decrease, i.e. to create a variable bus bandwidth. (Zheng column 5, lines 40-57) Thus, implementation of Zheng over the Lee/Kaganoi combination would result in a device that increases or decreases the bus bandwidth based on the perceived bandwidth needs by the communication device. This outcome is illogical when applied

to the presently pending claims, as it would lead to a variable bandwidth of the data bus 9, whereas the presently pending claims have a bus with constant bandwidth. Therefore, a person skilled in the art would not attempt the implementation of Zheng bus control module over Lee/Kaganoi device.

However, even if the hypothetical combination of Zheng bus control module with the Lee/Kaganoi combined device is attempted, the hypothetical resulting device would not disclose or suggest the presently pending claims, because Zheng lacks a mechanism to re-vitalize the bus after it has been interrupted. Instead, the hypothetical combination proposed by the Office Action would permanently remain in the error state, until some kind of hardware reboot is performed. On the other hand, in the presently pending invention the Bus Control Module generates a new arbitration frame, and sends it out to the bus when it is concluded that the arbitration frame is lost. No external command is needed for this re-vitalization. The re-vitalization mechanism is a limitation in the amended claim 1, and is supported throughout the specification, specifically on page 9, paragraph 0037.

Accordingly, Applicants respectfully submit that the presently pending claims 1 and 13 are not obvious over Lee in view of Kaganoi, and further in view of Zheng. Furthermore, considering that the dependent claims 2 and 7-12 include all of the features and elements of their amended basis claim, Applicants submit that these dependent claims are also patentable at least because they depend from a patentable independent claim.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

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PATENT

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 415-576-0200.

Respectfully submitted,


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